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TED STATES PATENT AND TRADEMARK OFFICE UNITED STATES DEPARTMENT OF COMMERCE United States Patent and Trademark Office Address: COMMISSIONER FOR PATENTS P.O. Box 1450 Alexandria, Virginia 22313-1450 www.uspto.gov OCT 0 3 2006 FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO. 10/758,524 01/15/2004 07148-108002 Jan G. Jaworski 5670 **EXAMINER** 7590 09/21/2006 Scott R. Pribnow KAM, CHIH MIN Cargill, Incorporated ART UNIT PAPER NUMBER 15407 McGinty Road West Wayzata, MN 55391

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)				
	10/758,524	JAWORSKI ET AL.				
Office Action Summary	Examiner	Art Unit				
	Chih-Min Kam	1656				
The MAILING DATE of this communication app Period for Reply	ears on the cover sheet with the c	orrespondence address				
A SHORTENED STATUTORY PERIOD FOR REPLY WHICHEVER IS LONGER, FROM THE MAILING DA - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication. - If NO period for reply is specified above, the maximum statutory period was realiure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 36(a). In no event, however, may a reply be tim will apply and will expire SIX (6) MONTHS from a cause the application to become ABANDONE	N. nely filed the mailing date of this communication. D (35 U.S.C. § 133).				
Status						
1) Responsive to communication(s) filed on						
2a) This action is FINAL . 2b) ☑ This	action is non-final.					
3) Since this application is in condition for allowar	nce except for formal matters, pro	osecution as to the merits is				
closed in accordance with the practice under E	Ex parte Quayle, 1935 C.D. 11, 45	53 O.G. 213.				
Disposition of Claims						
4) Claim(s) 1,2 and 8-11 is/are pending in the ap	plication.					
4a) Of the above claim(s) is/are withdraw	wn from consideration.					
5) Claim(s) is/are allowed.						
6)⊠ Claim(s) <u>1,2 and 8-11</u> is/are rejected.						
7) Claim(s) is/are objected to.						
8) Claim(s) are subject to restriction and/o	r election requirement.					
Application Papers						
9) The specification is objected to by the Examine	er.					
10)⊠ The drawing(s) filed on 15 January 2004 is/are	: a)⊠ accepted or b)□ objected	to by the Examiner.				
Applicant may not request that any objection to the	-, .					
Replacement drawing sheet(s) including the correct						
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.						
Priority under 35 U.S.C. § 119						
12) Acknowledgment is made of a claim for foreigna) All b) Some * c) None of:	priority under 35 U.S.C. § 119(a)-(d) or (f).				
1. Certified copies of the priority document	ts have been received.					
2. Certified copies of the priority document	ts have been received in Applicat	ion No				
Copies of the certified copies of the prior	rity documents have been receiv	ed in this National Stage				
application from the International Burea	• • • • • • • • • • • • • • • • • • • •					
* See the attached detailed Office action for a list	of the certified copies not receive	ed.				
Attachment(s)						
Notice of References Cited (PTO-892) Notice of Draftsperson's Patent Drawing Review (PTO-948)	4) Interview Summary Paper No(s)/Mail D					
3) Information Disclosure Statement(s) (PTO/SB/08)	5) Notice of Informal I					
Paper No(s)/Mail Date <u>8/16/04</u> . 6) Other:						

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DETAILED ACTION

1. In the preliminary amendment filed January 15, 2004, claims 3-7 and 12-25 have been cancelled. Therefore, claims 1, 2 and 8-11 are examined.

Informalities

The disclosure is objected to because of the following informalities:

2. The specification recites amino acid sequences (e.g., GNTSSSS) at page 12, lines 19-21, without providing a sequence identifier "SEQ ID NO:". Applicants must comply with the requirements of the sequence rules (37 CFR 1.821-1.825) and provide a copy of sequence listing and CRF containing all the sequences.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is drawn to a polypeptide. As written, the claim does not explicitly indicate the hand of man. Insertion of "isolated" or "purified" in connection with a polypeptide is suggested. See MPEP § 2105.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 1656

4. Claims 1, 2 and 8-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 2 and 8-11 are directed to a polypeptide comprising in the amino-terminal to carboxy-terminal direction: a first polypeptide segment having membrane anchoring properties; joined to a second polypeptide segment having a sequence of residues 75-114 of SEQ ID NO:12 or 14; joined to a third polypeptide segment having at least 40% sequence identity to residues 115-506 of SEQ ID NO:4. The specification indicates the present invention provides polypeptide with altered elongase KCS (3-ketoacyl CoA synthase) substrate specificity and/or catalytic activity such as the peptides comprises three polypeptide segments, the amino-terminal first polypeptide segment having membrane anchoring properties, joined to a second polypeptide segment having a sequence of residues 75-114 of SEQ ID NO:12 or 14, followed by a third polypeptide segment having at least 40% sequence identity to the C-terminal 392 amino acids of SEQ ID NO:4 (residues 115-506), examples of such polypeptides have the sequences of SEQ ID NO:12 and 14 (page 3, lines 8-18; page 12, lines 5-9), where residues 115-506 of SEQ ID NO:12 and 14 having >99% sequence identity to the residues 115-506 of SEQ ID NO:4 (see attached sequence match), and the substrate specificity (C22:1/C20:1) of SEQ ID NO:12 or 14 resembles that of the wild-type Bn polypeptide (SEQ ID NO:4, Example 3; Tables 4 and 5). The specification further indicates the Bn G307D polypeptide had a higher elongase activity and produced more C22:1 product than the unmodified wild-type Bn polypeptide (SEQ ID NO:4; Example 4; Table 7). While a species of SEQ ID NO:12 and 14 for altered elongase KCS has

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been disclosed, the specification does not describe a genus of variants for the third polypeptide segment of altered elongase KCS having at least 40% sequence identity to SEQ ID NO:4, and there is no disclosure of any particular structure to function/activity relationship in the disclosed species (i.e., polypeptides having at least 40% sequence identity to SEQ ID NO:4). Without guidance on the correlation of structure to function/activity of the third polypeptide segment of altered elongase KCS, one skilled in the art would not know which residues of the sequence are essential for function/activity. The lack of description on the structure to function/activity relationship of the third polypeptide segment in altered elongase KCS, and the lack of representative species as encompassed by the claims, applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise terms that a skilled artisan would not recognize applicants were in possession of the claimed invention.

Conclusion

5. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Min Kam whose telephone number is (571) 272-0948. The examiner can normally be reached on 8.00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr can be reached at 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 1656

Page 5

Chih-Min Kam, Ph. D.

Primary Patent Examiner

pnman

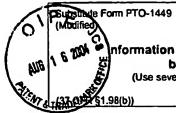
CHIH-MIN KAM

CMK

September 16, 2006

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RESULT 5
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OTHER INFORMATION: 5' 114 amino acids from A. thaliana FABI (SEQ OTHER INFORMATION: NO:2) and 3' 392 amino acids from B. napus OTHER INFORMATION: elongase KCS (SEQ ID NO:4), having a mutation OTHER INFORMATION: position 92; designated Atl14 K92R
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Best Local Similarity 99.7%; Pred. No. 1.5e-209;
Matches 391; Conservative 0; Mismatches 1;
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APPLICANT: Blacklock, Brenda J.
TITLE OF INVENTION: FATTY ACID ELONGASE 3-KET
TITLE OF INVENTION: SYNTHASE POLYPEPTIDES
FILE REPERENCE: 07148-108001
CURRENT APPLICATION NUMBER: US/09/877,476
CURRENT FILING DATE: 2001-06-08
PRIOR APPLICATION NUMBER: US.60/210,326
PRIOR FILING DATE: 2000-06-08
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SOFTWARE: FastSEQ for Windows Version 4.0
SEQ ID NO 14;
LENGTH: 506
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Patent No. 6713664
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ORGANISM: Artificial Sequence
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OTHER INFORMATION: 5'74 amino acids from A. thaliana FAEI (SEQ ID OTHER INFORMATION: NO:2) and 3'431 amino acids from B. napus OTHER INFORMATION: elongase KCS (SEQ ID NO:4) having a mutation at OTHER INFORMATION: residue 306; designated At74 G306D; hypothetical US-09-877-476-18
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                                                                                                                                                                                                                                                                                                 APPLICANT: Jaworski, Jan G.
APPLICANT: Jaworski, Jan G.
APPLICANT: BlackLock, Brenda J.
TITLE OF INVENTION: FATTY ACID ELONGASE 3-KETOACYL COATITLE OF INVENTION: SYNTHASE POLYPEPTIDES
FILE REFERENCE: 07148-108001
CURRENT APPLICATION NUMBER: US09/877,476
FRIOR APPLICATION NUMBER: 2001-66-08
PRIOR APPLICATION NUMBER: 2001-66-08
PRIOR PILING DATE: 2000-06-08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 2030; DB 2;
Pred. No. 1.9e-209;
0; Mismatches 1;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQ ID NOS: 56
SOFTWARE: PastSEQ for Windows Version 4.0
SEQ ID NO 18
LENGTH: 505
                                                                                                                                                                                                                                       ; Sequence 18, Application US/09877476; Patent No. 6713664; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      99.7%;
ilarity 99.7%;
Conservative (
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ORGANISM: Artificial Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
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US-09-877-476-18
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U.S. Department of Commerce Patent and Trademark Office

Attomey's Docket No. 07148-108002

Application No. 10/758,524

Information Disclosure Statement by Applicant (Use several sheets if necessary)

Applicant Jan G. Jaworski et al.

Filing Date

Group Art Unit 1638

January 15, 2004

U.S. Patent Documents							
Examiner Initial	Desig. ID	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date If Appropriate
CMK	AA	6,051,756	04/18/00	Chen et al.			
CMK	AB	6,124,524	09/26/00	James, Jr. et al.			

Foreign Patent Documents or Published Foreign Patent Applications								
Examiner	Desig.	Document	Publication	Country or			Trans	lation
Initial	ID di	Number	Date	Patent Office	Class	Subclass	Yes	No
CMK	AC	WO 95/15387	06/08/95	PCT				
1	AD	WO 96/13582	05/09/96	PCT				
	AE	WO 98/46766	10/22/98	PCT				
V	AF	WO 98/54954	12/10/98	PCT				
CMK	AG	WO 01/29238	04/26/01	PCT			Abstr.	

	Other D	ocuments (include Author, Title, Date, and Place of Publication)
Examiner Desig. Initial ID		Document
CMK	AH	GenBank Accession No. U29142
	Al	GenBank Accession No. U50771
	AJ	GenBank Accession No. AF009563
	AK	GenBank Accession No. AAA70154
	AL	GenBank Accession No. AAA96054
	AM	GenBank Accession No. AAB72178
	AN	GenBank Accession No. AAD22309
	AO	GenBank Accession No. CAA71898
	AP	GenBank Accession No. CAB36702
	AQ	"1999 Biochemistry and Molecular Biology of Plant Fatty Acids and Glycerolipids Symposium," National Plant Lipid Cooperative, June 9-13, 1999, South Lake Tahoe, California, P12, Blycklov
	AR	Barret et al., "A rapeseed FAEI gene is linked to the E1 locus associated with variation in the content of erucic acid," Theor. Appl. Genet., 1998, 96:177-186
V	AS	Broun et al., <u>Science</u> , 1998, 282:131-133
CIMK AT Clemens and Kunst, "Isolation of a Brassica napus cDNA (Accession No. AF009563) En Ketoacyl-CoA Synthase, a Condensing Enzyme Involved in the Biosynthesis of Very Lor		Clemens and Kunst, "Isolation of a <i>Brassica napus</i> cDNA (Accession No. AF009563) Encoding 3-Ketoacyl-CoA Synthase, a Condensing Enzyme Involved in the Biosynthesis of Very Long Chain Fatty Acids in Seeds," <u>Plant Physiol.</u> , 1997, 115:313-314

Examiner Signature	/Chih Min Kam/	Date Considered	09/16/2006
EXAMINER: Initials citation next communication to appl		not in conformance and no	t considered. Include copy of this form with

Substitute Form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 07148-108002	Application No. 10/758,524
	losure Statement plicant	Applicant Jan G. Jaworski et al.	
(Use several sheets if necessary) (37 CFR §1.98(b))		Filing Date January 15, 2004	Group Art Unit 1638

Examiner	Desig.	ocuments (include Author, Title, Date, and Place of Publication)
Initial	ID ID	Document
CMR	AU	Domergue et al., "Purification of the Acyl-CoA Elongase Complex from Developing Rapeseed and Characterization of the 3-Ketoacyl-CoA Synthase and the 3-Hydroxyacyl-CoA Dehydratase," Lipids, 2000, 35(5):487-494
	AV	Fiebig et al., "Alterations in CER6, a Gene Identical to CUT1, Differentially Affect Long-Chain Lipid Content on the Surface of Pollen and Stems," Plant Cell, 2000, 12:2001-2008
	AW	Fourmann et al., "The two genes homologous to Arabidopsis FAE1 co-segregate with the two loci governing erucic acid content in Brassica napus," Theor. Appl. Genet., 1998, 96:852-858
	AX	Ghanevati and Jaworski, "Active-site residues of a plant membrane-bound fatty acid elongase β-ketoacyl-CoA synthase, FAE1 KCS," <u>Biochim. Biophys. Acta</u> , 2001, 1530:77-85
	AY	Ghanevati, "Engineering and Mechanistic Studies of Fatty Acid Elongase 1 \(\beta\)-Ketoacyl-CoA Synthase, FAE1 KCS," A Dissertation, submitted to the Faculty of Miami University, Oxford, Ohi 2000
	AZ	Han, "B-Ketoacyl-CoA Synthase Gene from Brassica napus L.: Functional Characterization and Promoter Analysis," A Dissertation, submitted to the University of Hamburg, Hamburg, 1999
	AAA	Han et al., "Functional characterization of β -ketoacyl-CoA synthase genes from <i>Brassica napus</i> L. Plant Mol. Biol., 2001, 46:229-239
	ABB	James, Jr., et al., "Directed Tagging of the Arabidopsis FATTY ACID ELONGATIONI (FAEI) Ge with the Maize Transposon Activator," Plant Cell, 1995, 7:309-319
	ACC	Kunst et al., "Fatty acid elongation in developing seeds of Arabidopsis thaliana," Plant Physiol. Biochem., 1992, 30(4):425-434
	ADD	Lassner et al., "A Jojoba β-Ketoacyl-CoA Synthase cDNA Complements the Canola Fatty Acid Elongation Mutation in Transgenic Plants," Plant Cell, 1996, 8:281-292
	AEE	Millar and Kunst, "Very-long-chain fatty acid biosynthesis is controlled through the expression an specificity of the condensing enzyme," Plant J., 1997, 12(1):121-131
	AFF	Millar et al., "Accumulation of Very-Long-Chain Fatty Acids in Membrane Glycerolipids Is Associated with Dramatic Alterations in Plant Morphology," Plant Cell, 1998, 11:1889-1902
	AGG	Millar and Kunst, "The natural genetic variation of the fatty-acyl composition of seed oils in different ecotypes of Arabidopsis thaliana," Phytochemistry, 1999, 52:1029-1033
	АНН	Millar et al., "CUTI, an Arabidopsis Gene Required for Cuticular Wax Biosynthesis and Pollen Fertility, Encodes a Very-Long-Chain Fatty Acid Condensing Enzyme" Plant Cell, 1999, 11:825-838
	AII	Post-Beittenmiller, "Biochemistry and Molecular Biology of Wax Production in Plants," Annu. R. Plant Physiol. Plant Mol. Biol., 1996, 47:405-430
	AJJ	Pruitt et al., "FIDDLEHEAD, a gene required to suppress epidermal cell interactions in Arabidops encodes a putative lipid biosynthetic enzyme," Proc. Natl. Acad. Sci. USA, 2000, 97(3):1311-131
	AKK	Roscoe et al., "Mutations in the fatty acid elongation I gene are associated with a loss of \(\beta\)-ketoac CoA synthase activity in low erucic acid rapeseed," FEBS Letters, 2001, 492:107-111
	ALL	Tillman and Bell, J. Biol. Chem., 1986, 261:9144-9149
	AMM	Todd et al., "KCSI encodes a fatty acid elongase 3-ketoacyl-CoA synthase affecting wax biosynthesis in Arabidopsis thaliana," Plant J., 1999, 17(2):119-130
CMK	ANN	Van de Loo et al., "An oleate 12-hydroxtylase from Ricinus communis L. is a fatty acyl desaturase homolog," Proc. Natl. Acad. Sci. USA, 1995, 96:6743-6747

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Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))		Applicant Jan G. Jaworski et al.	
		Filing Date January 15, 2004	Group Art Unit 1638

	Other Documents (include Author, Title, Date, and Place of Publication)			
Examiner Initial	Desig. ID	Document		
CMK	A00	Venkateswari et al., "Molecular Cloning and Characterization of FATTY ACID ELONGATION! (BjFAE!) Gene of Brassica juncea," J. Plant Biochem. Biotech., 1999, 8:53-55		
CMK	АРР	Yephremov et al., "Characterization of the FIDDLEHEAD Gene of Arabidopsis Reveals a Link between Adhesion Response and Cell Differentiation in the Epidermis," Plant Cell, 1999, 11:2187-2201		

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